

Visit 4B at Booth # 230



GEAPS EXCHANGE 2000 Educational Session

What's New: *Whirligig*™ Universal Target/Bracket/Guard.

4B Elevator Components Ltd.

“Innovation, Technology, Quality & Value”



A presentation by Johnny Wheat, Manager of Electronic Products.

INTRODUCTION:

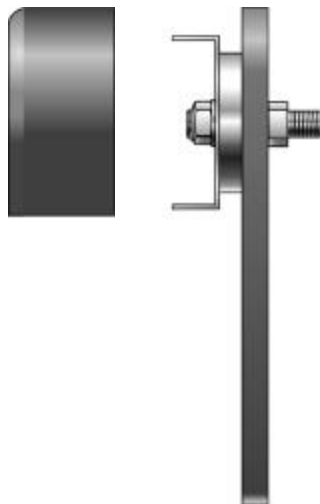
When installing an inductive proximity sensor to monitor the shaft speed of a Bucket Elevator, Conveyor, Rotary Air Lock, Hammer Mill or other similar machine, there are three additional items required:

1. A **target** fixed to the shaft for the sensor to “pick-up”.
2. A **bracket** to hold the sensor.
3. A **guard** to protect personnel from the rotating shaft and target.

These three additional items are not usually considered during the initial purchase of the sensor or speedswitch, but they are always required to complete the installation.

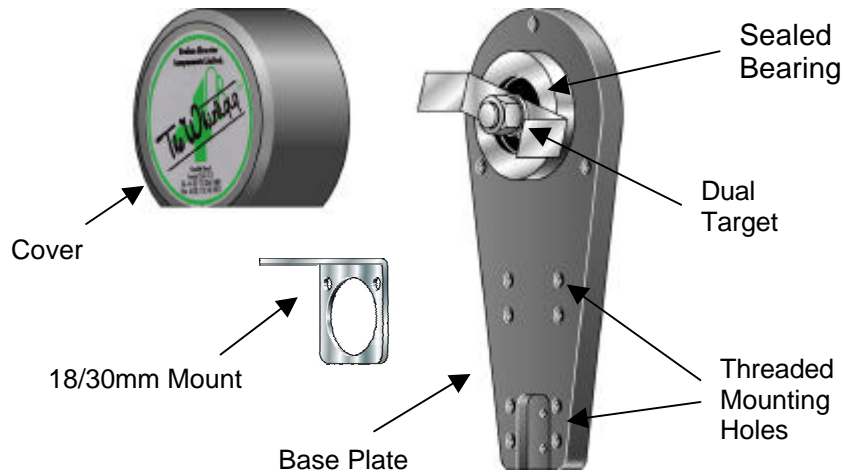
Since installations are rarely identical, there is usually a significant amount of site design and adjustment required to make the complete system function correctly. For this reason it is common to leave the details of the target, bracket and guard for the field personnel or the millwrights to figure out.

Obviously standardized installation components and methods would reduce site design, fabrication and installation time. This is now possible with the **Whirligig**™ universal target/bracket/guard.



Design:

The **Whirligig**™ base plate incorporates a sealed bearing which holds a stainless steel shaft with a ½” thread on one end and a dual metal target on the other. An engineered polymer cover encloses the rotating target for total safety. Threaded holes on the base plate accommodate different styles of rectangular sensors and a dual 18mm/30mm bracket mount supplied with the **Whirligig**™ securely holds cylindrical sensors.



Installation:

Installation is an extremely quick and simple three-step process. Every **Whirligig™** is installed the same way.

- Step 1: A 1" deep hole is drilled in the center (does not have to be exact) of the machines shaft and threaded for ½" NC.
- Step 2: A 5/8" wrench is used to thread the **Whirligig™** shaft and assembly to the machine shaft.
- Step 3: Rectangular sensors mount to the base plate using the screws provided or cylindrical sensors use the dual 18/30mm bracket mount provided.

The **Whirligig™** is a simple solution for standardizing on the sensor installation, and ensuring safer and more reliable operation.

The Whirligig™ advantage:

The **Whirligig™** design not only standardizes and simplifies the installation but also leads to a number of operational advantages over normal sensor installation. Since the monitored shaft, the bracket, the target and the sensor are now all one assembly, any normal or abnormal shaft movement has no effect on the performance of the system.

Shaft adjustment:

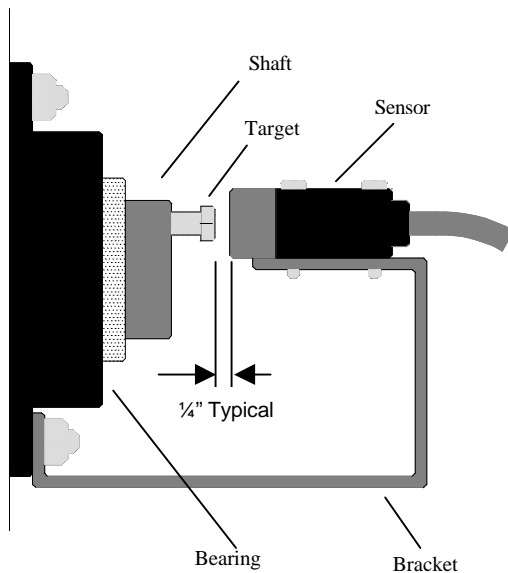
Many machines require periodic belt tensioning which involves moving the monitored shaft. For traditional installation without a **Whirligig™**, the attachment of the bracket, which holds the sensor to the machine, must be carefully considered to allow the bracket and sensor to move with the shaft, so that the sensing range of the sensor is not exceeded. By design the **Whirligig™** installation requires no such consideration as the whole assembly is attached to the machines shaft, and therefore moves with it.

Machine Vibration:

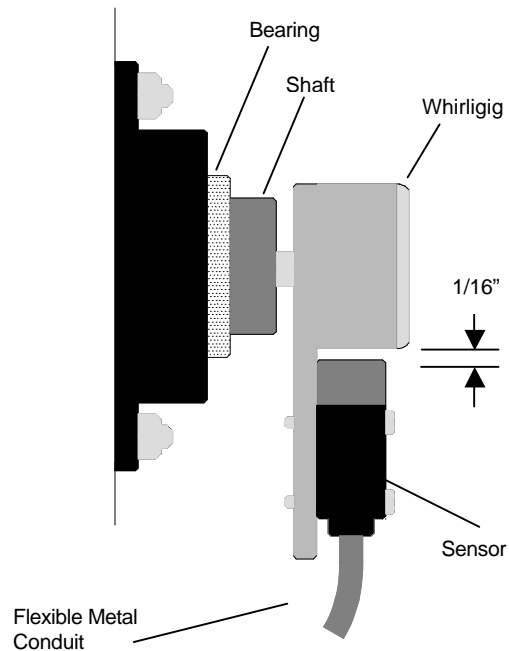
The typical sensing range for a shaft mounted inductive sensor is 7/16". If there is a clearance of 1/4" between the rotating target and the face of the sensor then the absolute maximum tolerance is 3/16". Under heavy loads and machine vibration the clearance between target and sensor could exceed 3/16", resulting in periodic false alarms.

When the **Whirligig™** is used, the sensor and target are mounted on the same plate, so that the distance from the target to the sensor remains the same no matter how severe the vibration is.

Traditional Installation
(Shown without guard)



Whirligig™ Installation



Safety:

The most important consideration for any installation is personnel safety. Targets fixed to a rotating shaft are a danger to personnel and must be guarded. The **Whirligig™** targets are protected by a tough polypropylene cover, which is not removed during installation or sensor testing.

A 1/16" gap is normally left between the sensor and cover for testing the system. A thin metal plate can be placed in this gap which will saturate the field of the sensor and simulate a shaft stop condition.

The new 4B Whirligig™ with its pending US Patent is the only solution available today for safe, reliable universal sensor mounting.